

What is claimed is:

1. A fluorochemical composition comprising a major amount of organic solvent and 0.05% by weight to 5% by weight of fluorochemical oligomer dispersed or dissolved in said organic solvent and said fluorochemical oligomer being represented by the general formula:

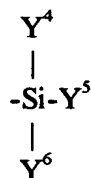


wherein X represents the residue of an initiator or hydrogen;

M^f represents units derived from fluorinated monomers;

- 10 M^h represents units derived from a non-fluorinated monomers;

M^a represents units having a silyl group represented by the formula:



wherein each of Y^4 , Y^5 and Y^6 independently represents an alkyl group, an aryl group or a hydrolyzable group;

- 15 G is a monovalent organic group comprising the residue of a chain transfer agent;

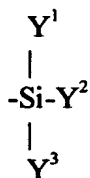
n represents a value of 1 to 100;

m represents a value of 0 to 100;

r represents a value of 0 to 100;

and $n+m+r$ is at least 2;

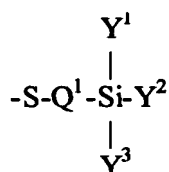
- 20 with the proviso that at least one of the following conditions is fulfilled: (a) G is a monovalent organic group that contains a silyl group of the formula:



wherein Y^1 , Y^2 and Y^3 each independently represents an alkyl group, an aryl group or a hydrolyzable group with at least one of Y^1 , Y^2 and Y^3 representing a hydrolyzable group; or (b) r is at least 1 and at least one of Y^4 , Y^5 and Y^6 represents a hydrolyzable group.

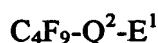
2. Fluorochemical composition according to claim 1 wherein at least one of Y^1 , Y^2 and Y^3 and/or at least one of Y^4 , Y^5 and Y^6 is a hydrolyzable group selected from the group consisting of halogen, an alkoxy group, an acyloxy group, an acyl group and an aryloxy group.

3. Fluorochemical composition according to claim 1 wherein said monovalent organic group G corresponds to the general formula:



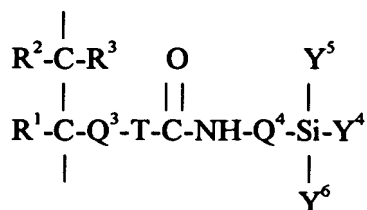
wherein Y^1 , Y^2 , Y^3 have the meaning as defined in claim 1 or 2 and wherein Q^1 represents an organic divalent linking group.

4. Fluorochemical composition according to claim 1 wherein M^f comprises a unit derived from a fluorinated monomer of the formula:



wherein E^1 represents a free radical polymerizable group and Q^2 represents an organic divalent linking group.

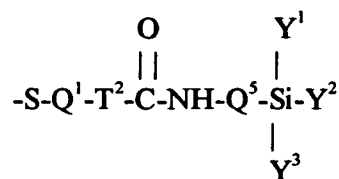
5. Fluorochemical composition according to claim 1 wherein M^a is a unit derived corresponding to the formula:



wherein R^1 , R^2 and R^3 each independently represents hydrogen, an alkyl group, an aryl group or halogen, Q^3 represents an organic divalent linking group, T represents O or NR with R being hydrogen, an aryl or a C_1 - C_4 alkyl group, and Y^4 , Y^5 and Y^6 have the meaning as defined in claim 1.

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6. Fluorochemical composition according to claim 1 wherein G corresponds to the formula:



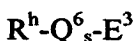
wherein Q^1 and Q^5 each independently represents an organic divalent linking group, T^2 represents O or NR with R being hydrogen, an aryl or a C_1 - C_4 alkyl group, and Y^1 , Y^2 and Y^3 have the meaning as defined in claim 1.

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7. Fluorochemical composition according to claim 1 wherein the composition is a homogeneous composition further comprising water and an organic or inorganic acid.

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8. Fluorochemical composition according to claim 1 wherein the units derived from non-fluorinated monomers are units derived from non-fluorinated monomers corresponding to the general formula:



wherein R^h represents a hydrocarbon group, Q^6 is a divalent linking group, s is 0 or 1 and E^3 is a free radical polymerizable group.

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9. Method of treating a substrate comprising applying to said substrate a composition according to claim 1.

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10. Method of treating a substrate comprising applying to said substrate a composition according to claim 1 and exposing a thus obtained coated substrate to water and an organic or inorganic acid.

11. Method of treating a substrate according to claim 9 further comprising the step of exposing the coated substrate to an elevated temperature of 60°C to 300°C.

5 12. Method according to claim 9 wherein said substrate is selected from the group consisting of plastics, ceramics and glass.

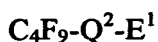
10 13. Substrate comprising a coating derivable from the coating composition of any of claim 1 wherein the substrate is selected from the group consisting of plastics, ceramics and glass.

14. Fluorochemical oligomer corresponding to the formula:



wherein X represents the residue of an initiator or hydrogen;

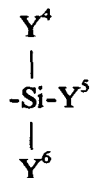
15 M^f represents units derived from fluorinated monomers having the formula:



wherein E^1 represents a free radical polymerizable group and Q^2 represents an organic divalent linking group;

M^h represents units derived from non-fluorinated monomers;

20 M^a represents units having a silyl group represented by the formula:



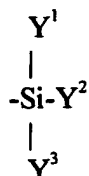
wherein each of Y^4 , Y^5 and Y^6 independently represents an alkyl group, an aryl group or a hydrolyzable group, with the proviso that at least one of Y^4 , Y^5 and Y^6 represents a hydrolyzable group;

25 G represents a monovalent organic group comprising the residue of a chain transfer agent;
n represents an integer of 1 to 100;
m represents an integer of 0 to 100;

r represents an integer of 0 to 100;

and n+m+r is at least 2;

with the proviso that at least one of the following conditions is fulfilled: (a) G is a monovalent organic group that contains a silyl group of the formula:



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wherein Y^1 , Y^2 and Y^3 each independently represents an alkyl group, an aryl group or a hydrolyzable group with at least one of Y^1 , Y^2 and Y^3 representing a hydrolyzable group; or (b) r is at least 1 and at least one of Y^4 , Y^5 and Y^6 represents a hydrolyzable group.

10 15. Fluorochemical oligomer having the formula:

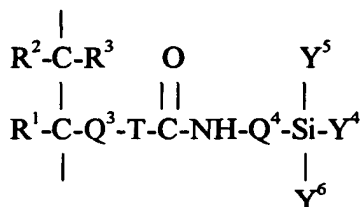


wherein X represents the residue of an initiator or hydrogen;

M^f represents units derived from fluorinated monomers;

M^h represents units derived from non-fluorinated monomers;

15 M^a represents units having the formula:



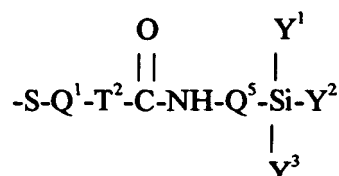
wherein R^1 , R^2 and R^3 each independently represents hydrogen, an alkyl group, an aryl group or halogen, Q^3 represents an organic divalent linking group, T represents O or NR with R being hydrogen, an aryl or a C_1 - C_4 alkyl group, and wherein each of Y^4 , Y^5 and Y^6 independently represents an alkyl group, an aryl group or a hydrolyzable group, with the proviso that at least one of Y^4 , Y^5 and Y^6 represents a hydrolyzable group;

G represents a monovalent organic group comprising the residue of a chain transfer agent;

n represents an integer of 1 to 100;
 m represents an integer of 0 to 100;
 r represents an integer of 1 to 100;
 and n+m+r is at least 2.

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16. Fluorochemical oligomer according to claim 15 wherein G corresponds to the formula:

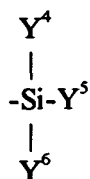


wherein Q¹ and Q⁵ each independently represents an organic divalent linking group, T² represents O or NR with R being hydrogen, an aryl or a C₁-C₄ alkyl group, and Y¹, Y² and Y³ each independently represents an alkyl group, an aryl group or a hydrolyzable group with at least one of Y¹, Y² and Y³ representing a hydrolyzable group.

17. Fluorochemical oligomer having the formula:

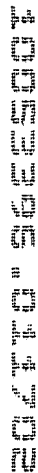


wherein X represents the residue of an initiator or hydrogen;
 M^f represents units derived from fluorinated monomers;
 M^h represents units derived from a non-fluorinated monomers;
 M^a represents units having a silyl group represented by the formula:



wherein each of Y⁴, Y⁵ and Y⁶ independently represents an alkyl group, an aryl group or a hydrolyzable group, with the proviso that at least one of Y⁴, Y⁵ and Y⁶ represents a hydrolyzable group;

G corresponds to the formula:



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m represents an integer of 0 to 100;

and $n+m+r$ is at least 2.